

The Climate Impacts Group: Piloting Climate Services for the Pacific Northwest

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Outline

- Introduction: Climate Impacts Group (CIG) and Regional Integrated Sciences and Assessment
- Long-term perspective
- Climate variability and short-term forecasts
- Observed and predicted anthropogenic change and its impacts



NOAA's RISA program

1995-98

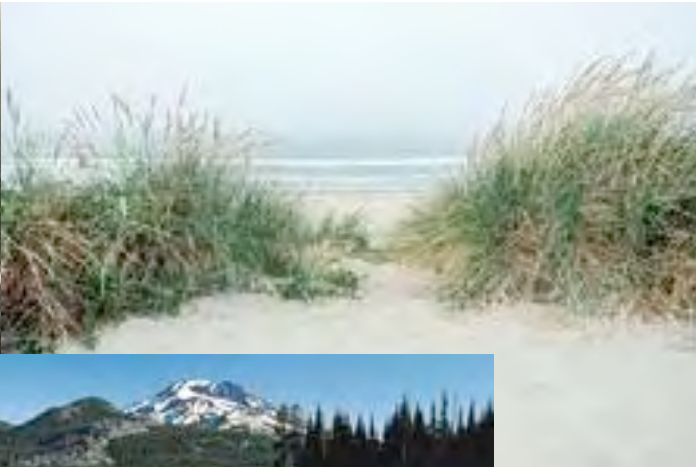
Northwest, California,
Southwest, Florida,
Western Water
Assessment

2002-2003

New England,
Hawaii/Pacific Islands,
Carolinas

2006?

Alaska, Southern Great
Plains



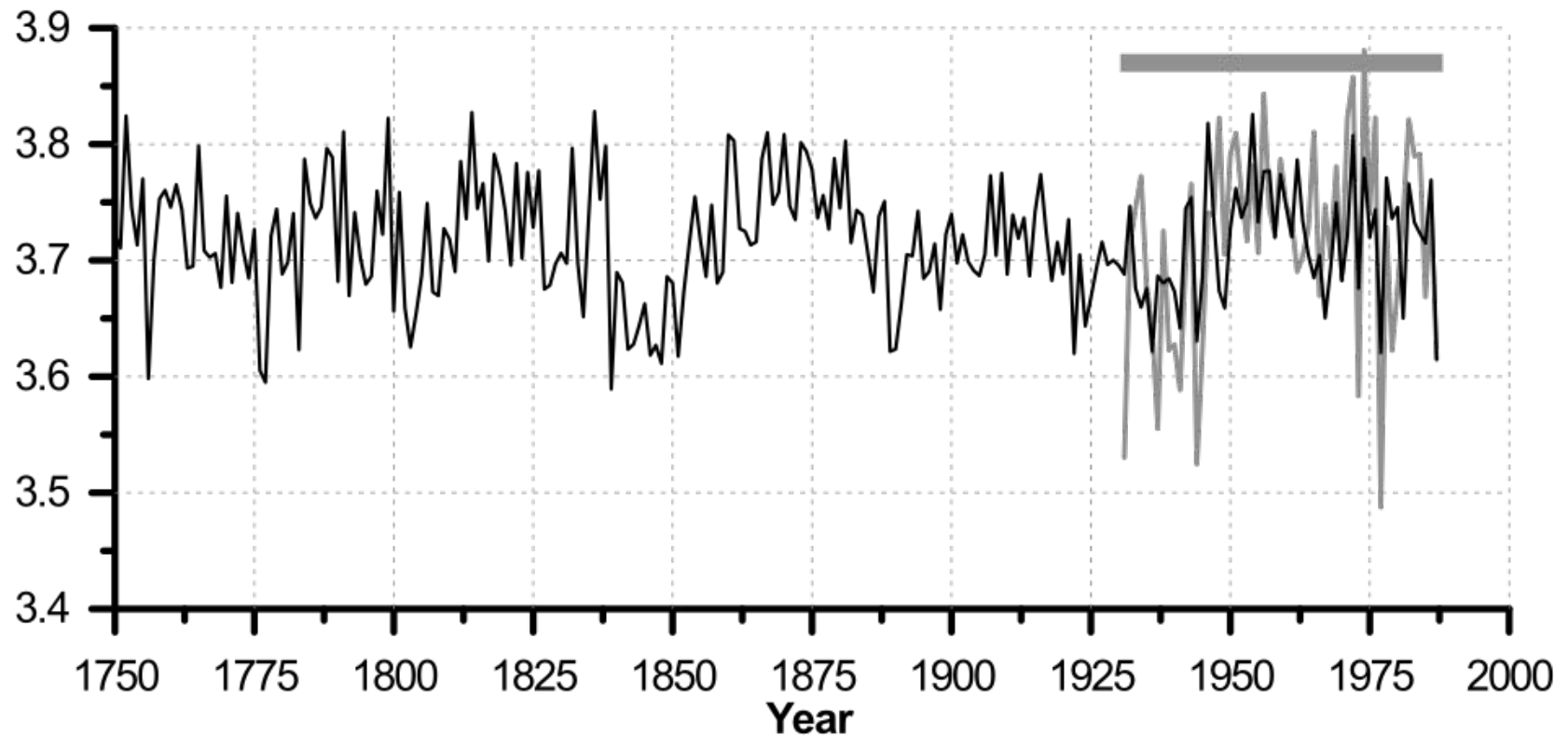
Research approach

- retrospective: establish past impacts of climate and societal responses
 - e.g., infrastructure built around seasonal cycle
- interdisciplinary: whole greater than the sum of parts
- contextual: climate one of many factors influencing natural resources

spatial scales: kilometers to global

time scales: intraseasonal to millennial

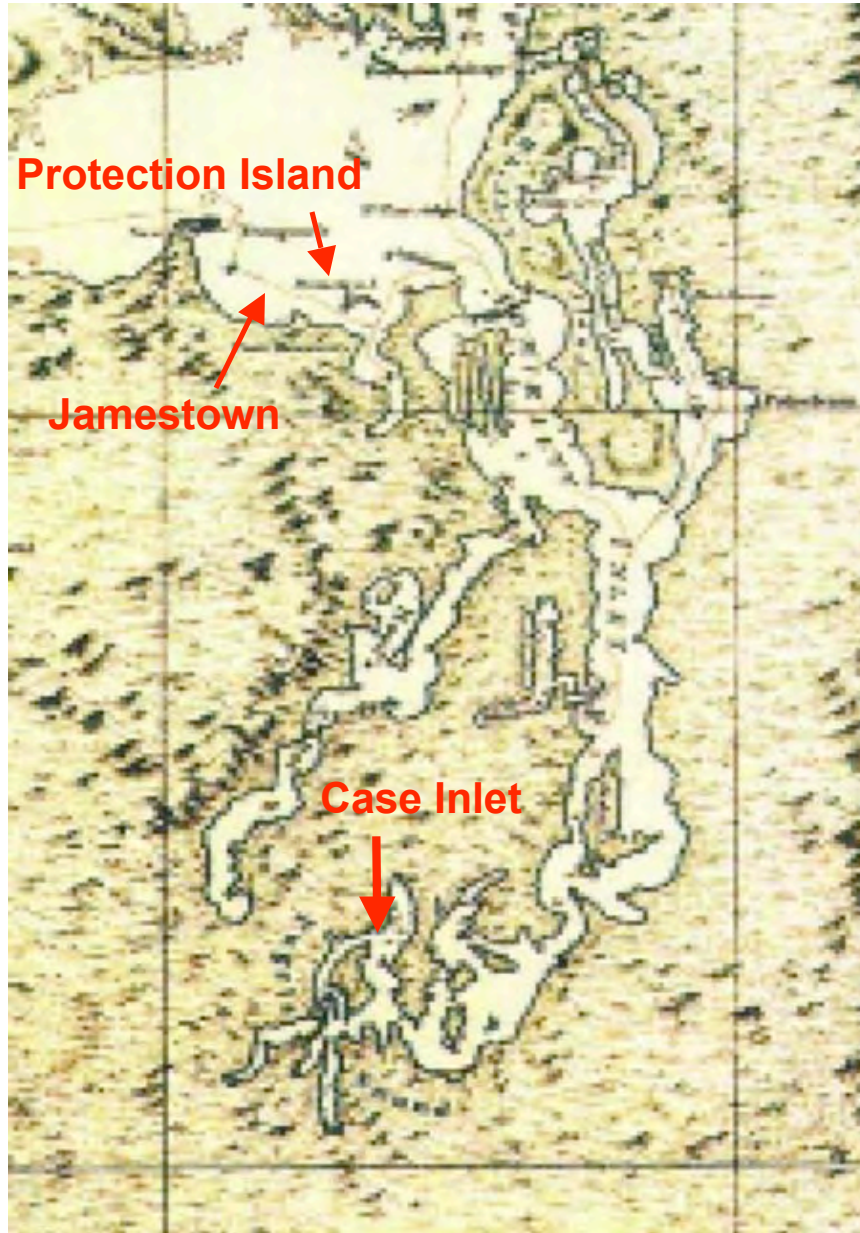
Columbia River flow, reconstructed from tree rings



Gedalof et al., JAWRA, 2005



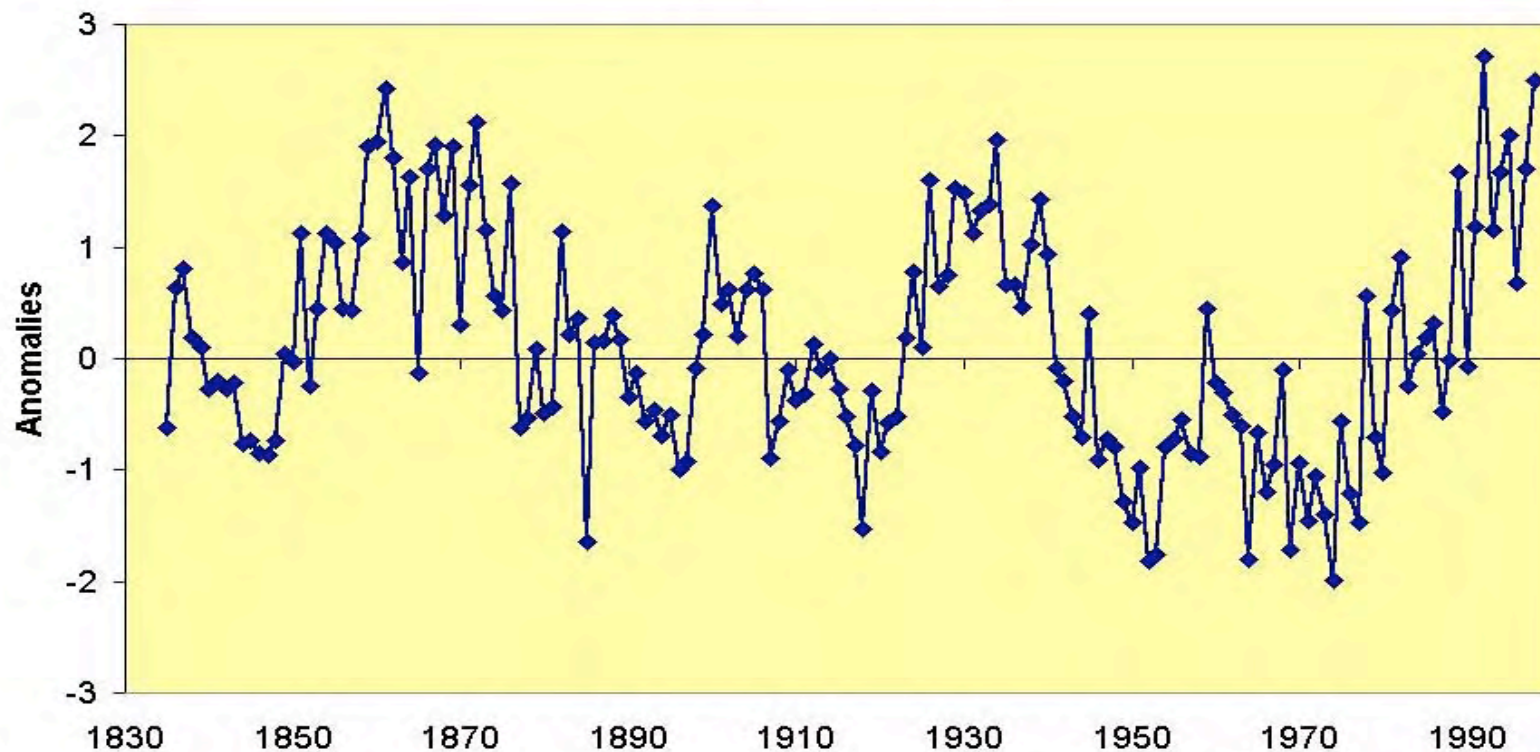
A record of past climate from geoducks!



Geoduck growth 1835-1998

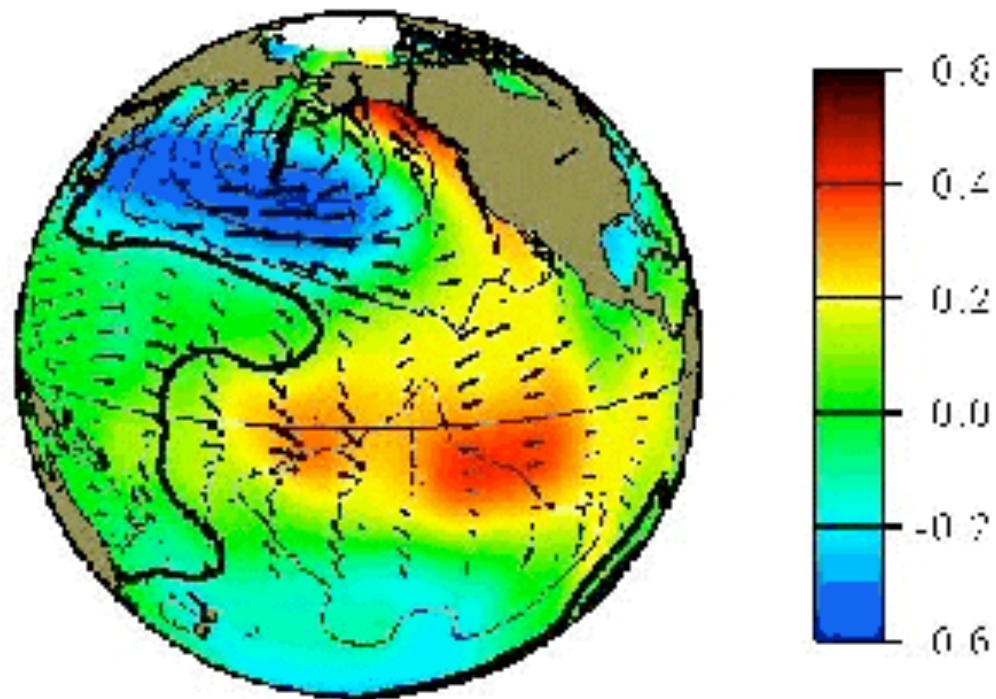


Mean of four series at Protection Island

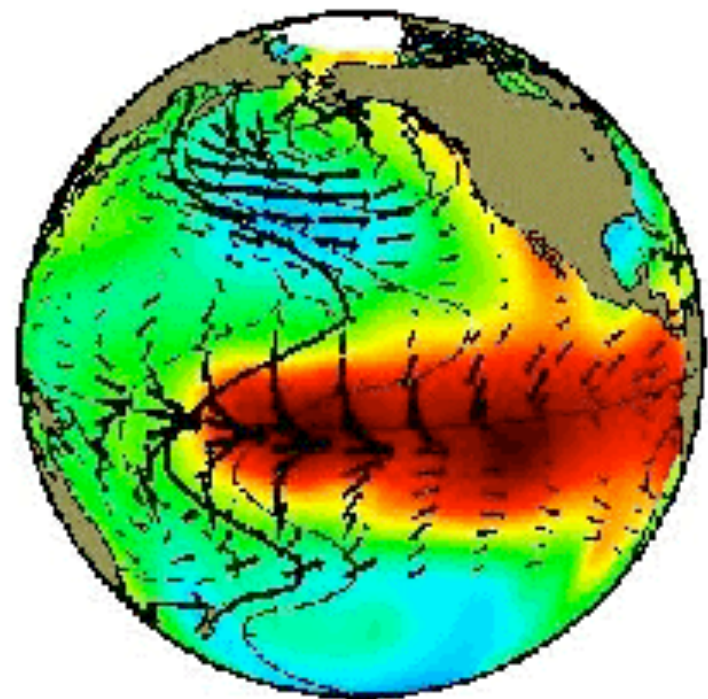


Are Strom, UW

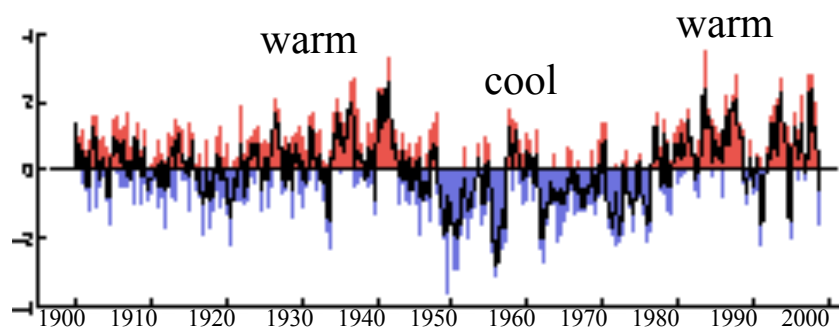
Pacific Decadal Oscillation



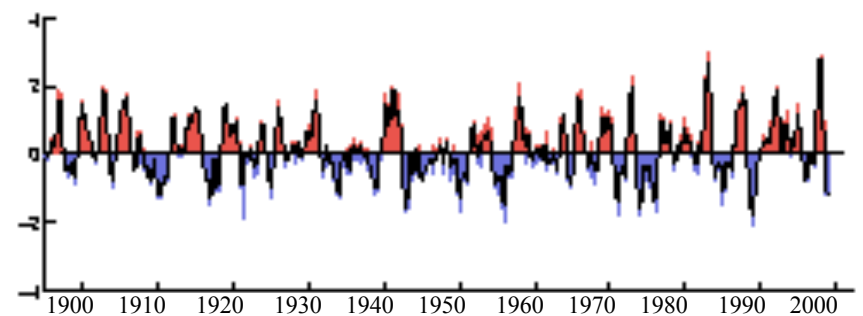
El Niño/Southern Oscillation



A history of the PDO

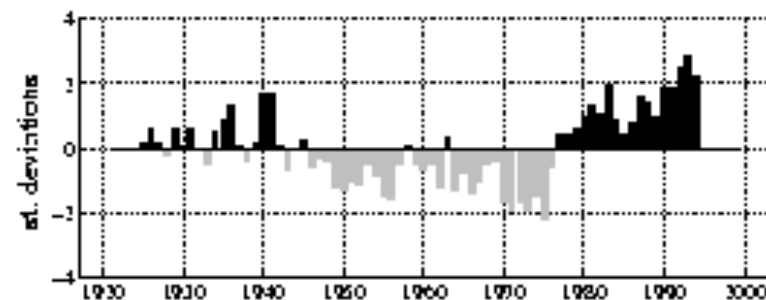
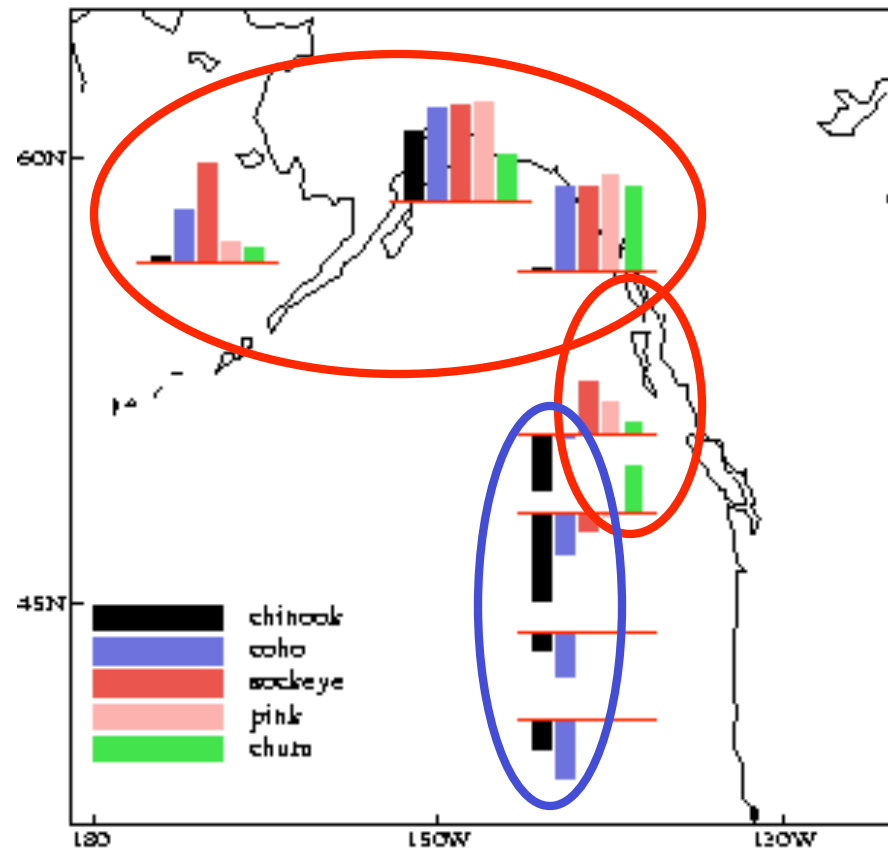
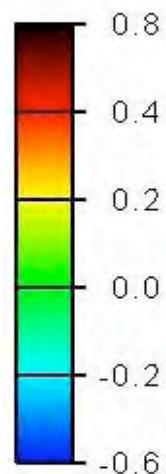
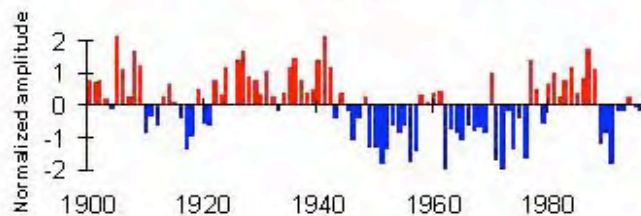
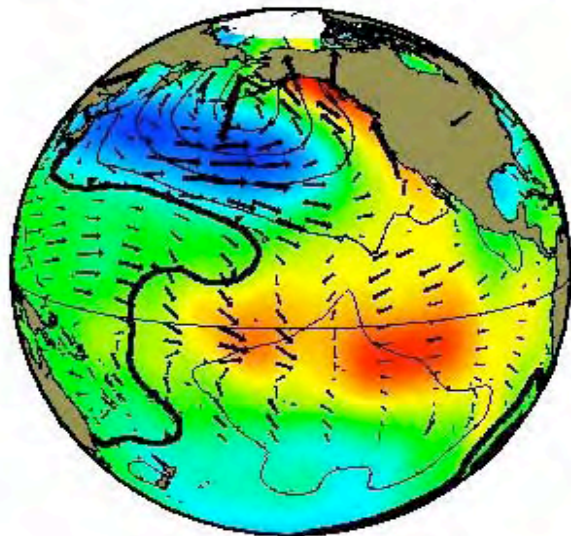


A history of ENSO

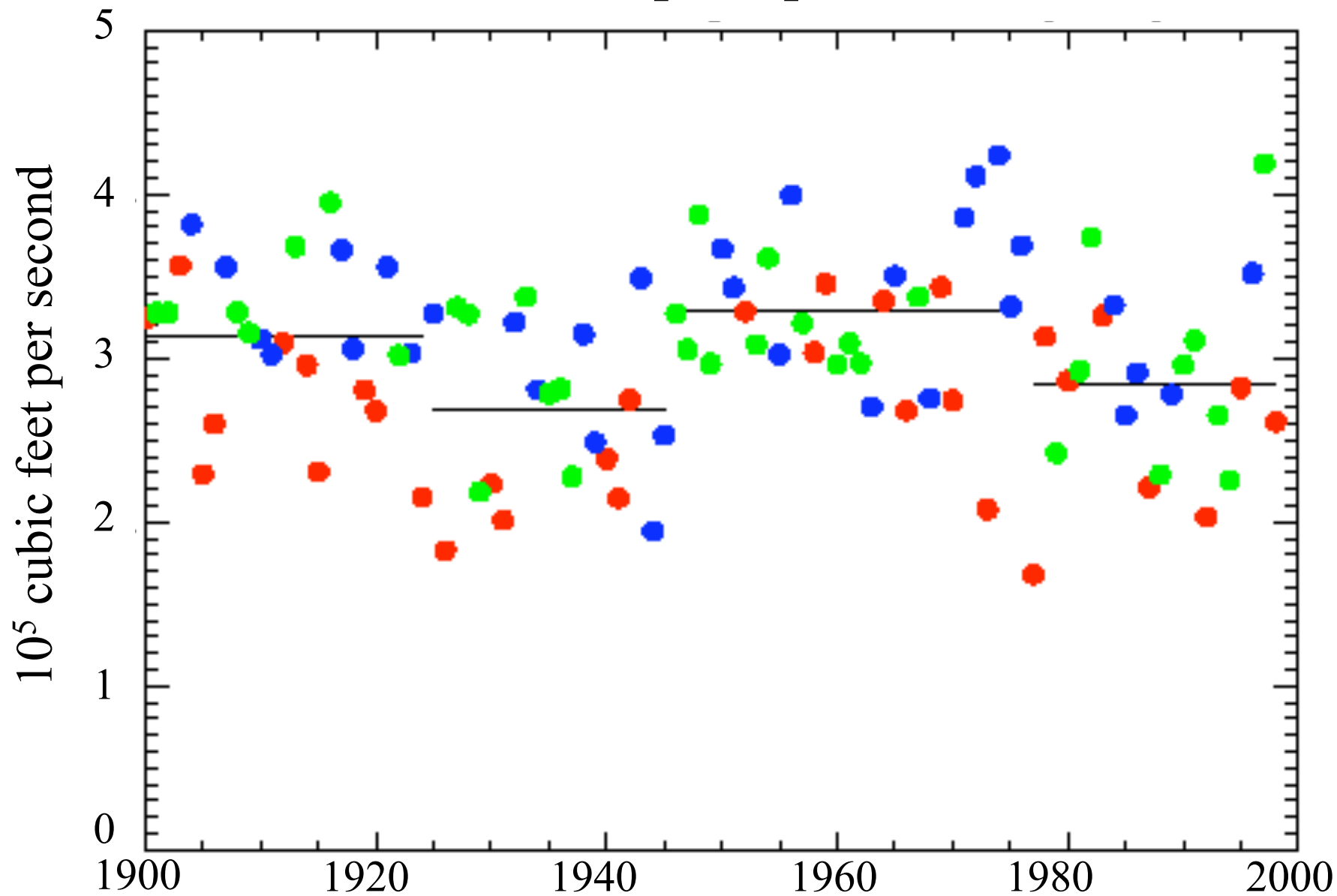


Alaska and PNW salmon production are out of phase (Hare et al 1999, Fisheries)

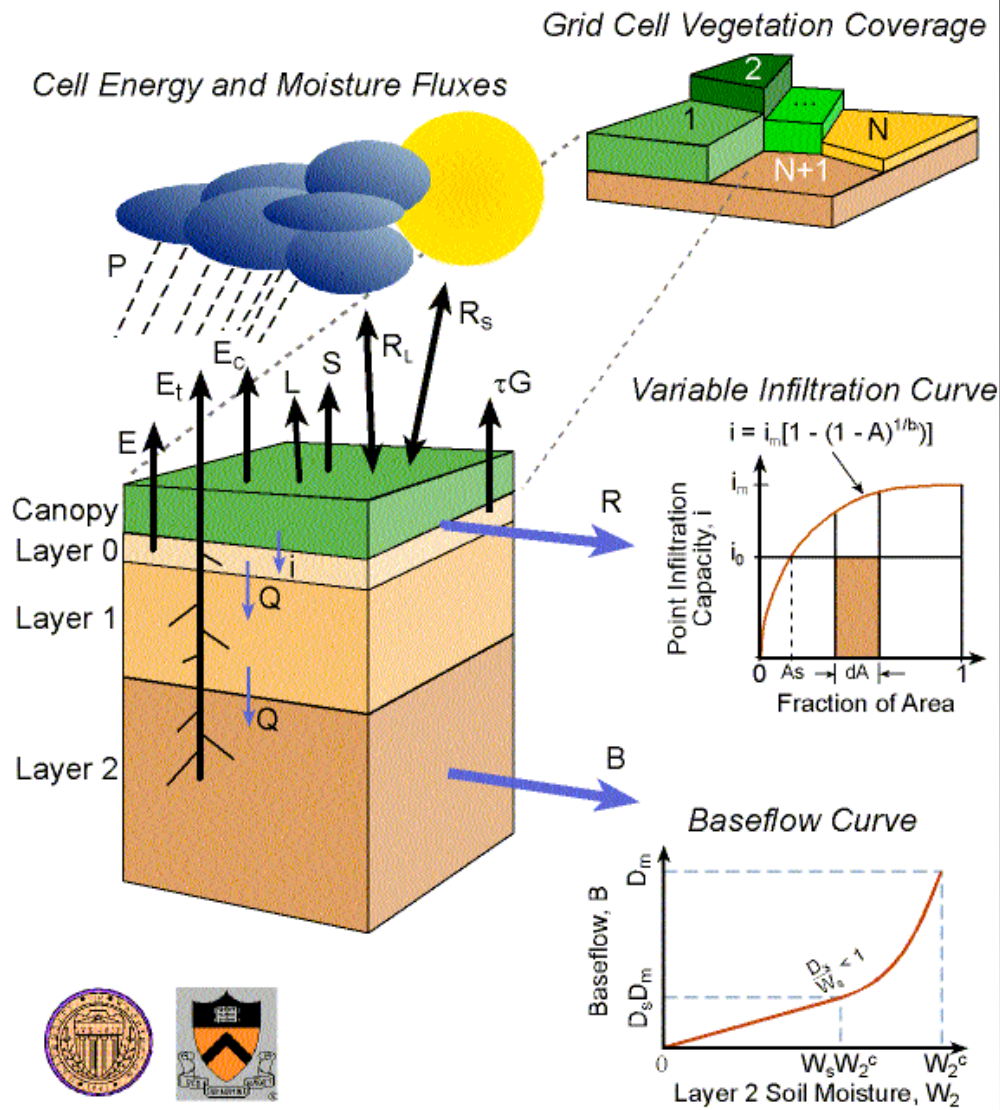
Pacific Decadal Oscillation



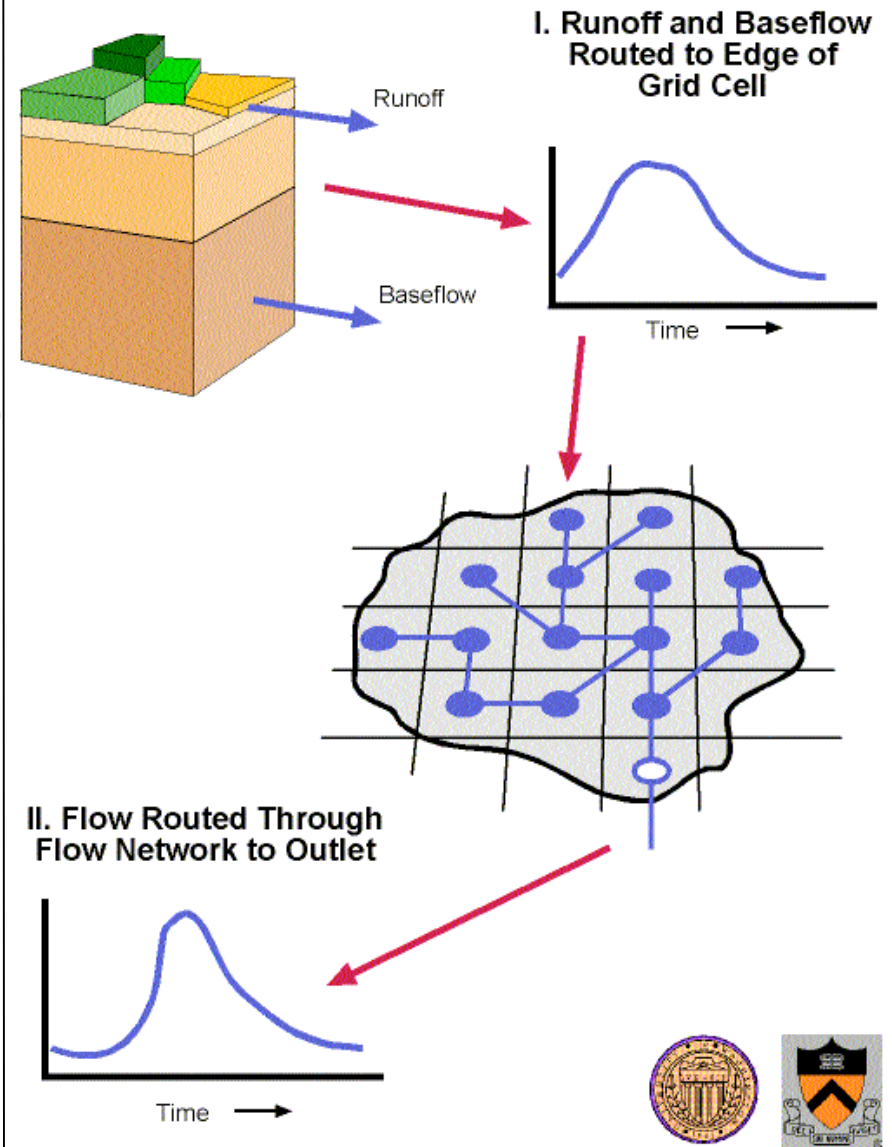
Columbia River Apr-Sep streamflow



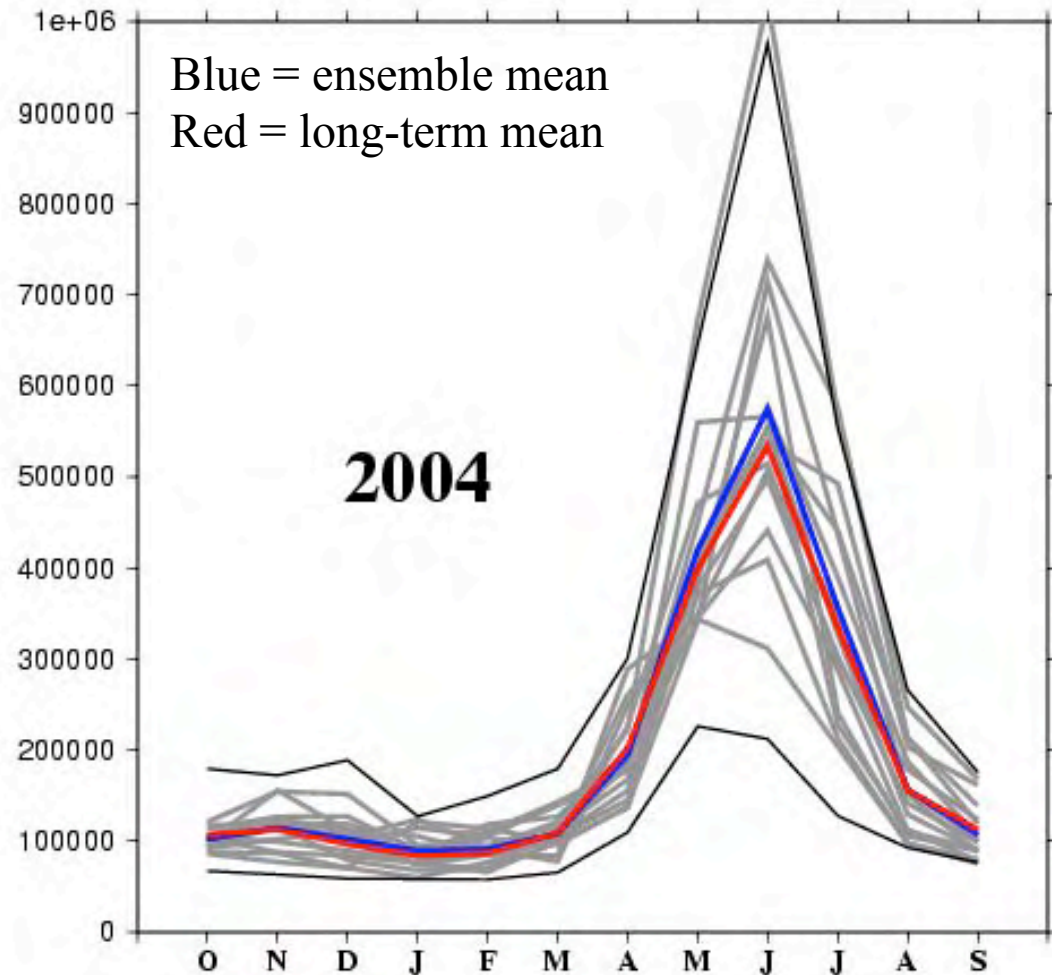
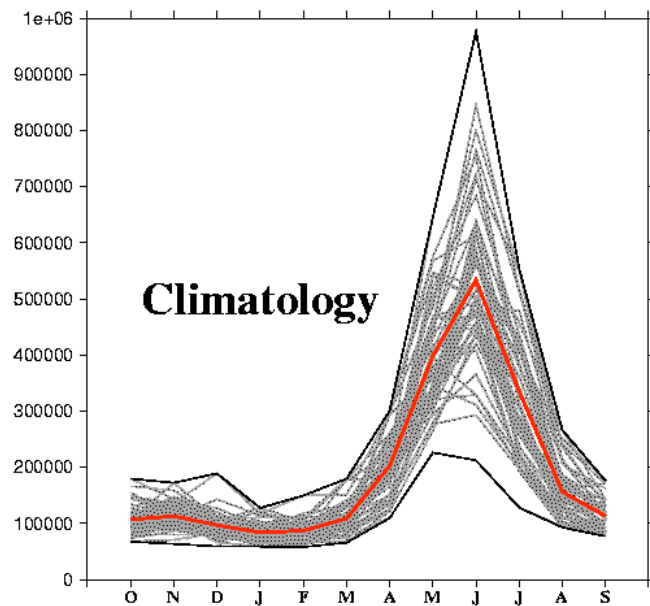
Variable Infiltration Capacity - n Layer (VIC-nL) Macroscale Hydrologic Model



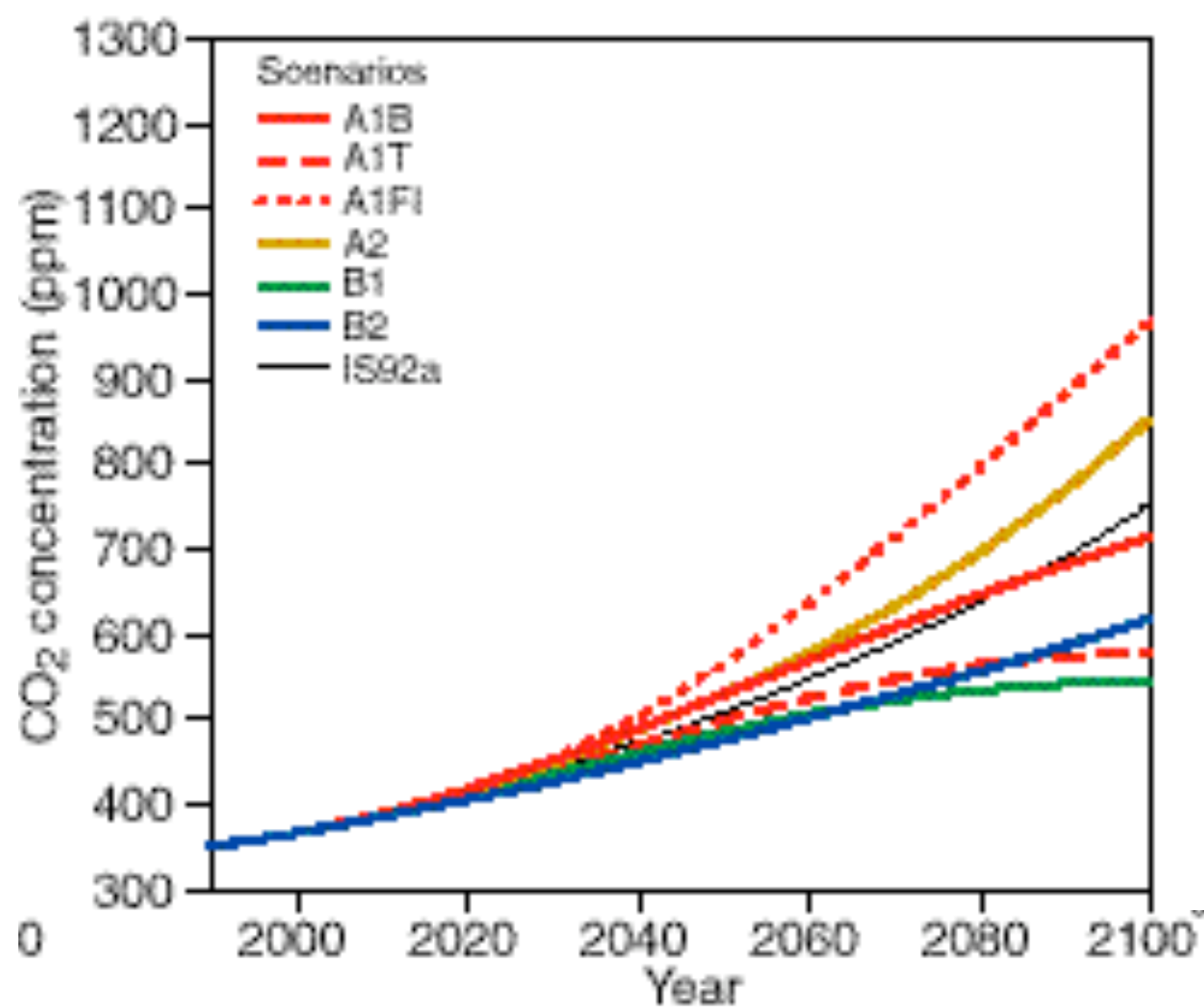
River Network Routing Scheme for VIC-nL



Baseline Forecast at The Dalles using Older Resampling Methods (Oct 1, 1993 initial conditions)



(b) CO₂ concentrations



January 2053...

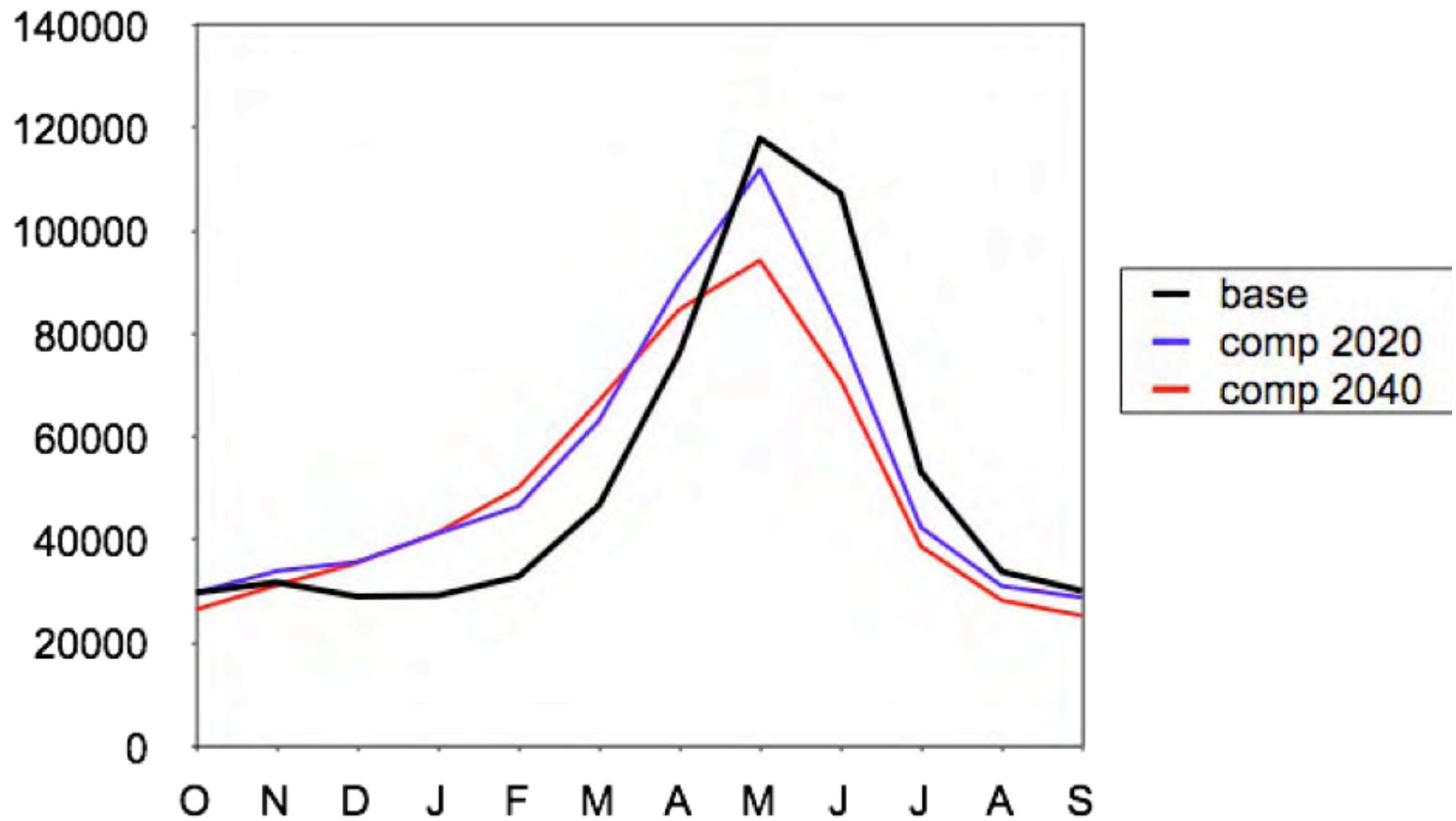
I DON'T CARE WHAT THEY SAY,
THIS GLOBAL WARMING SCARE
IS JUST A BUNCH OF LOONY
LEFT-WING ENVIRONMENTALIST
ANTI-GROWTH HYPE!

SO,
IS THIS
YOUR FIRST
WINTER HERE
IN JUNEAU?

HORSEY
©2003
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Snake River at Ice Harbor



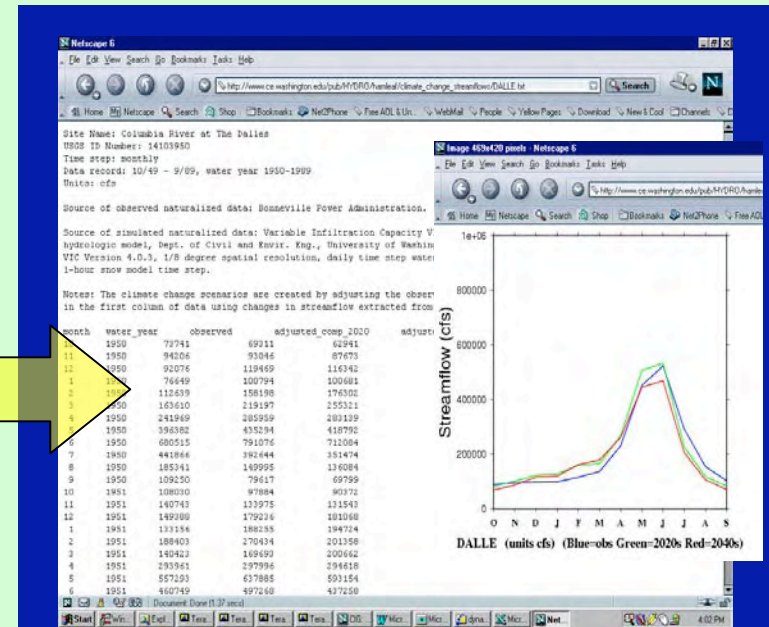
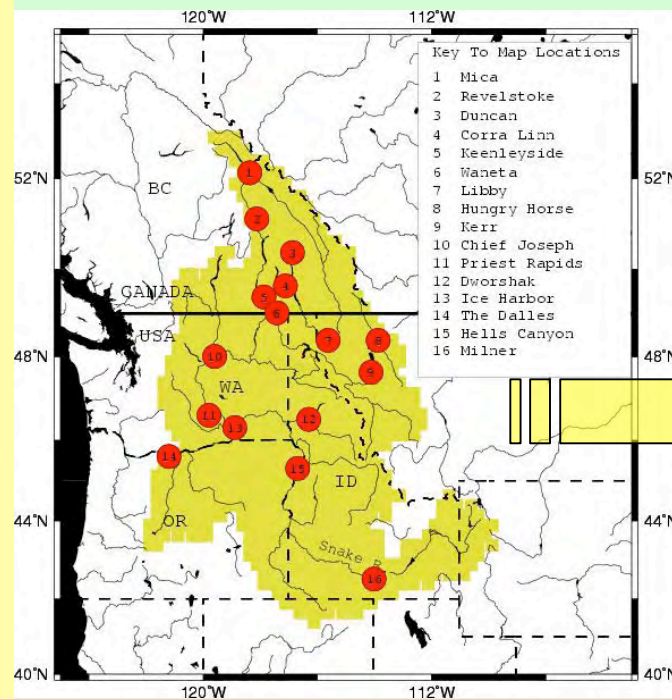
Planning for climate change: water resources in the Columbia basin

Water policy workshops have highlighted the need to inject climate change information into existing river basin planning activities and to provide free access to streamflow scenarios.

Partners:

Northwest Power
and Conservation
Council

Idaho Dept of
Water Resources



www.ce.washington.edu/~hamleaf/climate_change_streamflows/CR_cc.htm

Conclusions

- CIG has piloted climate services for the Northwest (some pull, mostly push)
- Examining the past is key to understanding the future:
 - Hydrological sensitivity to warming
 - Biological response to climate
 - Social response to climate stresses